**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| In re Patent Application of: | ) | |
| **LEVINE ET AL.** | ) | |
| | ) | Examiner: A. Boyce |
| Serial No. **09/656,393** | ) | |
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| Filing Date: **September 6, 2000** | ) | |
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| Confirmation No. **9357** | ) | Art Unit: 3623 |
| | ) | |
| For: **SYSTEM AND METHOD FOR MANAGING MOBILE WORKERS** | ) | |
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**SECOND SUPPLEMENTAL DECLARATION UNDER 37 CFR §1.131**

Mail Stop AF
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

We, **GARRY FENIMORE and KENNETH M. LEVINE**, do hereby declare and state:

1. We are the joint inventors of claims 1-49 of the above-identified patent application.

2. This Second Supplemental Declaration is submitted in response to the Office Action mailed February 25, 2005, in which the previous Supplemental Declaration Under 37 CFR §1.131 was considered defective because the exhibits provided by the Applicant were not sufficient to account for the entire period during which diligence is required (i.e., a time prior to January 21, 1997, until the alleged reduction to practice in April 1999). The Examiner required actual dates and rejected the claims over the same references as before. While preparing this Second Supplemental Declaration, it was determined that an actual limited software code was reduced to practice in October 1998 and

demonstrated under confidentiality to Lockheed Martin. A full software code version was reduced to practice under the sponsorship of the Technological Research Development Authority of the State of Florida in April 1999. Diligent activities are set forth starting on page 6.

3. Exhibits 1A, 1B, 1, 2A, 2B, 2, 4 and 5 are the same exhibits submitted in the previous Supplemental Declaration and maintain the same exhibit numbers. Exhibits 3A, 3B, 3C, 3D, 3E, 3F, and 3 are new exhibits that show proof of diligence from before the January 21, 1997 effective date of Mahapatro to reduction to practice of a limited software code version in October 1998 and a full software code version in April 1999. Exhibit 3 includes much of the same material as in previous Exhibit 3, but with added pages. The exhibits are broken up in sequential chronological order.

4. We conceived the subject matter of the above-identified patent application while working at MasterLink Corporation in Orlando, Florida, United States, prior to January 21, 1997, the effective date of Mahapatro.

5. We worked diligently from a time prior to January 21, 1997 to reduction to practice of the claimed invention set forth in claims 1-49 for a computer implemented method and system for managing mobile workers. We worked diligently from before January 21, 1997 until we reduced to practice a prototype of a limited software code version in October 1998, and full software code version in April 1999. These versions were operative as the computer implemented method and system as now claimed. The

invention as reduced to practice classifies within a database of a computer a plurality of target objects that correspond to facilities assets to be worked on by a mobile worker. The attributes of each target object are defined, including tasks to be performed on each target object. Mobile workers are scheduled for the tasks to be performed by running a rule engine to determine the algorithms and heuristics to be used to schedule mobile workers for the tasks to be performed. A schedule of jobs is output to the mobile workers.

6. In another aspect of the reduced to practice invention, user configured system agents and software components are built and automate the system environment for managing mobile workers. The system agents and software components are configured with user configured settings of a policy database that are reflective of a particular business.

7. A job classification can be created within a planning agent module corresponding to a collection of tasks to schedule. The workers' skills and material are required to complete the tasks. Based on a plurality of rules contained within the rule engine, the workers' skills are matched with the tasks to be scheduled. A schedule for the mobile worker management is output. Different algorithms can be run as claimed.

8. A simulator database can also be established for running a simulator program to establish policy values in a simulation of the working of a system environment to determine optimum policy values for a given business.

9. The initial conception and beginning development of the present invention is reflected in Exhibits 1A, 1B, 1, 2A, 2B and 2. Exhibits 1, 2A, 2B and 2 are copies of presentation documents that show how target objects can be classified, algorithms and heuristics of a rule engine used, system agents developed, and schedules output. These documents were drafted by inventor, Garry Fenimore. Exhibits 1A, 1B, 1, 2A, 2B and 2 reflect work accomplished before January 21, 1997, the effective date of Mahapatro. Attributes of target objects are defined, including tasks to be performed for scheduling the mobile workers. A rule engine is run to determine algorithms and heuristics to be used to schedule mobile workers while outputting a scheduled job to the mobile worker.

10. Exhibit 1A is a paper prepared by inventor, Garry Fenimore, and presenting a conceptual specification that discloses the concept of the software and the system and method for linking management to a mobile worker with a client-server application. Other details of the present invention are set forth. Pages 1-9, and more particularly, pages 5-9, show the basic framework of the claimed invention used for classifying the database target objects and defining attributes of each target. Mobile workers are scheduled by running a rule engine to determine algorithms and heuristics to be used to schedule mobile workers for the tasks to be performed. The scheduled jobs are output. Other details in the Exhibit concern the configuration of system agents and software components with user configured settings.

11. Exhibit 1B shows a number of use-case scenarios for job creation, job execution, job scheduling, management reporting, and system initiation. This exhibit shows that further development occurred to create the different scenarios as part of the management system and software.

12. Exhibit 1, pages 7-10, are class diagrams that show which software definitions are required for each of a target definition class, tasks definition class, resource class, and job class. Page 11 of Exhibit 1 shows the problems associated with prior art paper-based systems. A policy can be formulated with templates. This reduces manual roles, automates planning, scheduling and dispatching, including two-way communication and mobile worker support teams through which a schedule of jobs can be output to the workers.

13. Exhibit 2A includes presentation documents made under confidentiality to Maintenance and Diagnostics, LLC showing further work regarding how the software would be operative as a process-focus job management system using active system agents to automate supervisory processes. Flexible rules "policy" control system agents link workers to job information. The system agents can automate supervisory processes using the flexible rules as policy rules for determining jobs, resources, and work schedules using job life cycles, target definitions, task definitions, together with job management rules and a job manager agent.

14. Exhibit 2B includes a group of presentation documentations forwarded under confidentiality to gather interest at Lockheed Martin Information Systems. These documents show

that the core work management system can include work orders, resources and work schedules and include a knowledge-based specification implementation with management, skilled worker and customers.

15. Exhibit 2 is a group of presentation documents used in confidential presentations given in October 1996, and in subsequent months, and showing different target definitions and task definitions that are input into policy rules. These rules include planning, scheduling and dispatching rules. Target definitions are operative with the policy rules. Each of the rules is operative with agents, for example, a planner, scheduler, and dispatcher agent. Work schedules, available resources, and jobs to be performed are output.

## DILIGENCE

16. From before January 21, 1997, the effective date of Mahapatro, and into January and February 1997, major elements for a system architecture, a physical architecture for the distributed intelligent work management system, and job state transitions were further developed. From the time of conception and development of the invention shown in Exhibits 1A, 1B, 1, 2A, 2B and 2, we worked diligently from before the January 21, 1997 effective date of Mahapatro for almost two years to build the base of intelligent agents and provide the foundation for the limited software code version that was reduced to practice in October 1998, and later reduced to practice in a full software code version in April 1999 under the sponsorship of the

Technological Research and Development Authority (TRDA) of the State of Florida. We spent many hours looking at different approaches for scheduling algorithms and later wrote much prototype code in C++. Inventor Levine later had joined inventor Fenimore and developed different rule engines and algorithms starting in July 1998, while beginning to write extensive software code.

17. From the beginning of January 1997 through March 1997, inventor Fenimore had worked on various object model developments and refinements to the target definition objects, task definition objects, and action definition objects. Fenimore worked on understanding the economic consequences of scheduling efficiencies and relating them to a maintenance operation. Before January 21, 1997, as shown in Exhibits 2A, 2B, and 2, Fenimore worked with personnel at the consulting company A-Tek, the predecessor of MasterLink. We initially contacted Lockheed Martin Information Systems and other companies to interest them in the invention and how the intelligent work management system of this invention would meet their maintenance needs. In anticipation of working with Lockheed Martin, in January and February 1997, Fenimore improved and refined an object model development for the intelligent work management system and how it would fit within the Lockheed Martin maintenance program and their associated end-item products, such as aircraft and other avionic systems, and how maintenance scheduling would occur in a military environment. After the initial request to give a presentation to Lockheed Martin, the first conference call

contact was made in February 1997 with Mr. Greg Howard as shown on the handwritten note on page 1 of Exhibit 3A.

18. In February, Fenimore and other consultants at A-Tek worked on how the intelligent work management system could operate within the healthcare industry as shown on pages 3 and 4 of Exhibit 3A. This type of development would concern the implementation of target definition objects, task definition objects, and action definition objects in the healthcare industry, which would be different than what would be developed for military applications, such as Lockheed Martin. We continued our work with Lockheed Martin through March 1997 to develop further objects and how these objects would relate to the specific maintenance environment at Lockheed Martin.

19. We diligently continued our work with Lockheed Martin. We improved the physical architecture for the distributed workflow management system, and created standards for a vertical domain workflow management application, an agent workflow and various engine libraries, an object request broker, the class libraries, and language compiler and operating system as shown in the physical architecture document from April 1997 (Exhibit 3B, page 3). Descriptions of such basic components of the architecture are shown on the right-hand side and were further developed in April 1997 from our meetings with Lockheed Martin, and based upon the ascertained requirements of the maintenance facilities at Lockheed Martin. Fenimore and other consultants, such as John Hartman, developed graphics for job state transitions (page 14) and forwarded the documents on April

30, 1997 to the business development manager at Lockheed Martin Information Systems. Also in April 1997, how the claimed subject matter could be developed in an object orientated environment was developed and the economic consequences of scheduling efficiencies and relating them to maintenance operations were considered. An addendum of the object orientated environment development is shown on page 8. Also as set forth on pages 9-12, as noted by the letter from the president of the A-Tek Consultants to management expert, Phil Crosby, Fenimore further developed how the intelligent layer for the software could be implemented into the healthcare industry.

20. In May 1997, work continued on how to make the intelligent work management system universally applicable to all industry segments, including the healthcare industry and the military, such as Lockheed Martin. In May 1997, A-Tek associate, John Hartman, discussed in a telephone call with Randy Dougherty of Lockheed Martin (pages 15, 16 and 17) the continued developments of A-Tek and inventor Fenimore and its system background. At this time, Fenimore had been working on a prototype demonstration. On page 16, a small demonstration prototype is described to show how agent behaviors would be controlled through the maintenance of policy. Also, in May 1997, various maintenance problems associated by U.S. Air Force pilots were addressed as shown on pages 18 and 19. Further discussions were held with Lockheed Martin Information Systems in June 1997 with further development at this time occurring for real world active agents, user defined control of active software agents,

and the use of a wireless client server technology to establish the link between the mobile worker and the resources of the knowledge base on the server, as shown on page 21, dated June 24, 1997.

21. The next month in July 1997 (Exhibit 3C, page 1), further development occurred to determine how the later claimed invention could be implemented into the maintenance requirements of a more detailed maintenance environment such as presented by the joint strike fighter. Pages 2-12 in Exhibit 3C are part of a presentation that was given to Lockheed Martin showing development relating to a data center process management and what kind of target task definitions and design data definitions could be used. This reflects an improved knowledge of what is shown in Exhibits 1B, 1, 2A and 2B, or 2 for how the claimed system and method would be implemented in the avionics environment at Lockheed Martin.

22. We continued our development with Lockheed Martin as shown on pages 13-16 reflecting various conferences or meetings. By the end of August 1997 (pages 17-19), we enhanced our system development based on feedback received at previous meetings. Additional classes were added to MasterLink class models, and additional use cases with suggested initial interfaces were developed that could support the use cases. Also, details were determined for developing a working prototype and the type of software to be used. Fenimore in September continued work by developing standards for Lockheed Martin Information Systems as shown in the letter dated September 10,

1997 (page 20) reflecting that Fenimore had additional conferences with Lockheed Martin to develop the claimed system and method to fit within the Lockheed Martin maintenance environment.

23. After the Orlando Computer Conference in October 1997 (Exhibit 3D, page 1), Fenimore worked on developing object model parameters and refining locators, location data and area objects for the intelligent work management system of the present invention. Later in November 1997, he continued development concerning how to re-engineer the maintenance work process. Development continued on the entire maintenance process and how the different workflow, job management rules, planner, scheduler and dispatcher agents would work with work schedules, resources and jobs, and how various definitions would be implemented for different agents. How the software would fit into different systems was developed. How the software would work in an object-oriented programming environment for different objects and rule engine developments to determine algorithms and heuristics was developed. How the software would be implemented in an efficient and cost effective manner for such companies as Lockheed Martin was developed. Artificial intelligence was developed that would include the use of a different planner, scheduler, dispatcher and job management agents and different definitions such as job types, job state transitions, tasks, targets, skills, work schedules and rules that can be contained in the database. A system configuration was developed that would best be used with the software and the type of work scheduling and execution and

what logical improvements could be accomplished. Fenimore with A-Tek consultants worked diligently from October 1997 through March 1998 on these matters and placed in writing a plan that included a detailed summary of development work.

24. This plan is shown in a portion of the business plan reflecting these developments (Exhibit 3E and dated April 9, 1998). This document summarizes much of the development that occurred in the latter part of 1997 and beginning of 1998.

25. By January 1998, we had begun developing the MasterLink core to be worked within a facilities management framework for different hospital facilities. We had worked in developing specifications with the Construction Systems Institute (CSI) as related to hospital and similar facilities (Exhibit 3F, page 1). This also included further development in a specific environment for CurranCare (page 2). Page 3, dated February 3, 1998, notes the object oriented environment and agent technology, and notes specifically the diligent work applied in the different areas, including the medical industry. By March 1998, we were working on how the different workers and corporate management would fit within the overall system environment (pages 4 and 5).

26. In May and June 1998, the final software architecture and an overview of the software code to be written was developed. By July 1, 1998, Levine began to work closely with Fenimore in developing rule engines and writing software code to meet the requirements developed in the preceding year and a half. Levine worked on the domain object model for the intelligent work management system and the object model. At this

time, we as joint inventors, wrote papers as guidelines describing how the initial intelligent work management architecture, the intelligent work management intelligent agents, and the initial scheduling algorithm would work. By August 1998, we had written software code for the first architecture, including the first planner, scheduler and job state manager and dispatcher. By September 1998, we had integrated this work for inclusion in the initial graphic user interface screens and intelligent work management database. The progress of our development is set forth in the 1998 plan (Exhibit 3F) dated September 11, 1998, which shows what work management and software code had been written and which functions were realized. Pages 2-11 set forth the functional details of the developed software code. Artificial intelligence had been developed by the September 11, 1998 date, which is operative with the different planner, scheduler, dispatcher and job management agents, and the different definitions such as job type, job state transitions, tasks, targets, skills, work schedules and rules that can be contained in a database. With sufficient written software code, the newly formed MasterLink (from A-Tek) worked with the Technical Research and Development Authority (TDRA) of the State of Florida to obtain further development funding as a small business to continue to develop this sophisticated invention (Exhibit 3F, pages 14-19).

27. By October 1998, an initial limited version of the software code that accomplished the claimed invention was reduced to practice and a prototype demonstrated to various customers

under confidentiality, including Lockheed Martin. The initial work with TRDA led to further meetings with the maintenance department at the University of Central Florida in October 1998 (Exhibit 2F, page 16). These meetings in September and October 1998 led to a refinement of the initial intelligent work management system, including what kind of new reports could be generated by the scheduler. In November, we continued to demonstrate the intelligent work management system and improve its outputs such that by December 1998, various performance tests of the intelligent work management system written software code were conducted. We were able to improve performance based on the results of these tests. The letters dated December 1998 (Exhibit 3, pages 1-5) explain the TRDA correspondence and an overview of the software code function (page 5). By December 1998, we had also improved the use cases, domain models and design. Pages 11-33 show the different use case titles, description and results that had been developed and improved. Different use case schematics and related diagrams, collaboration diagrams, and a system architecture overview are shown. Besides an improvement in the system architecture, the physical architecture diagram and the job state transitions, we had developed by December 1998 the software code for different classes. Although some of the pages may be similar to previous exhibits, they show the different functionality of the written software code that had been developed.

28. In January 1999, after reduction to practice of the high-level prototype software code at the end of 1998, we

developed a more complete software code version, i.e., and improved the software code for analysis of development and other rates. We reviewed and enhanced the system in February 1999, and in March 1999, had several industry experts in computer science and artificial intelligence review the software code. In April 1999, we finished a more complete TRDA version of the software code.

29. We worked diligently up to April 1999 to refine the software code we wrote over the previous months, and also developed software code for the scheduling function, as set forth in Exhibit 4. By this time, we had developed and reduced to practice the more complete TRDA software code for all aspects of the claimed invention. Testing and results of the software code function as demonstrated are reported in a Confidential Brief of the Assessment of MasterLink Prototype Software Demonstration, as shown in Exhibit 5. This brief is an assessment of the prototype software demonstration. Although dated in June 1999, this assessment is based on the prototype trial of the software that had been reduced to practice by April 1999.

30. We later worked diligently to refine the software code and enhance operation of simulation sections, including different agents, and the intelligent work management system, and later filed a patent application on the reduced to practice invention.

31. We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that

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these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

7/20/05
Date

Gary Fenimore
GARY FENIMORE

Date

KENNETH M. LEVINE

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LEVINE ET AL.
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Date

7/24/2005
Date

GARRY FENIMORE

KENNETH M. LEVINE